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Virginia Wildlife

*A Monthly Magazine Dedicated to the
Conservation, Restoration, and Wise Use of
Virginia's Wildlife and Related Natural Resources,
and to the Betterment of Hunting, Fishing and
Outdoor Recreation in Virginia*

Published by VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES, Richmond 13, Virginia



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COVER: The snow goose—known to scientists as *Chen hyperborea*, "the goose from beyond the north wind"—nests in the Arctic; several thousand winter in Virginia's Back Bay. Photo by Dade Thornton from National Audubon Society.

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EDITORIAL

WATER—Great Gift of Nature

ONE of our most essential and treasured natural possessions is water. So important is it that life on earth would be impossible without it. One does not have to recall his biology to know that water is the very blood of life, that no plant, no creature on our planet could live without it. Indeed, the first question often asked of astronomers about new worlds in outer space is, Do they have water?

The sad thing about water is that it is one of our least appreciated natural resources and becomes important, seemingly, only when we cease to have it in the amount and form needed. Plants and animals, industry, commerce—indeed, all that is important to man requires adequate water; yet many of our people take for granted this sparkling *Gift of Nature*. Such indifference can prove costly in future years.

To insure the conservation and maximum beneficial use of this rich heritage in Virginia, while enhancing the growth and prosperity of the state, efforts are being made to measure, preserve, augment, purify, and make more effective use of the water resources of the Commonwealth. The success of these efforts depends upon a public that is both *interested* and *informed*.

In an effort to awaken an intelligent interest among our people in water and water problems, the State Soil Conservation Committee, with the assistance of other agencies and individuals, has just published the *Progress Report on Water Resources of Virginia*. We were aware, of course, that the report was in the making and looked forward to seeing it. But, as is usual with publications, months slipped by and we had almost forgotten about it, when all of a sudden we spotted one of the first copies. What a pleasant surprise!

Instead of seeing a usual dull and lifeless publication, here was a booklet that caught the eye and evoked interest. Its attractive four-color, wine-red cover and 112 inside pages of masterfully illustrated two-color facts and data make the water story one of the most readable we've seen. Subjects treated in a lively and interesting fashion include: The Water Cycle; The Water We See; Water Beneath the Ground; The Water We Use; Water: Vital to Industrial Development; Water: Agriculture's Greatest Need; Water: Everyone's Playground; Conserving, Developing and Protecting Water Resources; Forestry; Solving Local Water Problems; Water Study Programs; Water Doctrines, Policies and Legislation; Summary; and Prospects.

There is also a commendatory letter by Governor J. Lindsay Almond, Jr., and a listing of cooperative agencies, institutions, committees, and individuals.

We have gone over the report from cover to cover and, in our opinion, this is one of the finest documents of its kind that has been released. To Mr. John H. Daniel, chairman of the State Soil Conservation Committee, under whose zeal, energy and careful guidance the Report was prepared—as well as to all of his committee associates—go our heartiest and warmest congratulations.

—J. J. S.

LETTERS

"Give Wildlife a Brake"

JUST for the fun of it I have been counting the dead animals I see on my way to work each morning and night. The road I travel is a back country road for 3.5 miles, hard surfaced, and of which one mile is in the city limits. I have kept a record for one year, from August of 1958 until August of 1959. I don't think people realize the huge number of animals that are killed on the highways each year. The list: 1 squirrel, 6 skunks, 15 rabbits, 3 quail, 5 house-cats, 2 opossums, 1 house rat, 1 groundhog, 11 birds, 1 pigeon, 2 doves, and 2 snakes.

Fred Sarver
Hollins, Virginia

Kudos from a Columnist

I HAVE been planning for some time to write about your fine publication for *The Northern Virginia Sun*. I finally did, and the day it appeared, the delightful September issue of VIRGINIA WILDLIFE arrived by mail. After reading your excellent editorial, "School Again," the Virginia checklist and the announcement of the Annual Wildlife Essay Contest, I was sorry that I had not waited to include them. Each issue seems to be better.

Dorothy Cable Dreese
Nature Editor, *The Northern Virginia Sun*
Arlington, Virginia

Bierly's Cardinals Appreciated

MANY thanks for the beautiful cover picture by Ed Bierly on your December issue of VIRGINIA WILDLIFE. Congratulations on a most attractive magazine—inside and out.

Mrs. H. L. D.
Fairfax, Virginia

Source Material for Wildlifer

YOUR publication was strongly recommended by Al Nutting, Director of the Forestry School at the University of Maine, as an excellent material source for a young man who expects to make fish and game management his career.

Edwin L. Parker, President
A. G. Spalding & Bros., Inc.
Chicopee, Massachusetts

From a Montana Biologist

I'M looking forward to the refreshing presentation of both popular and technical information which one finds in your magazine.

Robert L. Brown, Biologist
Montana Department of Fish and Game
Chouteau, Montana

Of Value to Scout Units

I AM still informing all Scouting units, especially Explorers, of the value of this informative magazine put out each month. Keep up the good work.

E. H. Allen
Winchester, Virginia



Commission Photo by Kesteloo

Many of the accepted soil conservation practices can hardly be improved upon as farm wildlife management practices. These practices result in a high population of wild birds and animals which can become an additional source of income.

Wildlife and Agriculture in Virginia

By IRA N. GABRIELSON, *President*
Wildlife Management Institute

EVER since Hugh Bennett visualized and dramatized the soil conservation movement, wildlife biologists and administrators and soil conservationists have been allied closely in the fight to preserve and restore America's renewable natural resources. Staff members of the Soil Conservation Service, like Dr. Edward H. Graham, Frank Edminster, and Verne Davison—to name only three—have contributed greatly to the public understanding of wildlife problems and have furthered the cause of wildlife conservation substantially. At the same time, many professional workers of wildlife management have supported projects to increase the productivity and fertility of the soil.

There is a very good reason for this. Wildlife is produced on lands used for other purposes such as agriculture and forestry. There are relatively few dedicated acres of land anywhere that are devoted primarily to the production of wildlife. The kinship between the soil conservationists and the wildlife conservationist, especially in a predominantly agricultural state like Virginia, therefore, is a very real and a very intimate one.

Wildlife is a direct product of the soil just as apples, corn, wheat or tobacco are products of the soil. On any given area, the abundance of doves, quail, turkeys, deer, cottontails, and squirrels will be governed by two factors—

the use or non-use to which the area is put and the innate or artificially induced productivity of the soil. Burned out, farmed out, eroded eroproduct will produce some desirable wildlife, just as it will produce some crops, but a comparable acreage of highly fertile farmland will produce up to ten times as many game, song, and insectivorous birds and mammals, provided sufficient food and cover are available the year around.

Farms Ideal Homes for Wildlife

Fortunately, in the eastern states at least, the diversified topography and the resultant interspersion of the various land classes make the modern, well-managed farm almost ideally suited to the more beneficial and desirable native farm-game species. Storage of surplus waters in farm ponds, strip-cropping and contour plowing, the use of cover crops, the retirement from use of field borders and other agriculturally unproductive areas, the fencing of cattle away from stream banks and woodlots, and the replacement of barbed wire with permanent hedges are all accepted soil conservation practices that can hardly be improved upon as farm wildlife management practices.

Why try to encourage wildlife? What direct benefits can the farmer or landowner expect in exchange for time, money and labor expended in efforts to encourage birds and mammals on his property? And the reverse side of the coin: If desirable wildlife is encouraged, will not

Condensed from an address at the annual meeting of the Virginia Chapter of the Soil Conservation Society of America in Natural Bridge, Virginia, November 6, 1959

also undesirable forms be attracted at the same time?

In my work in wildlife management and administration I have talked to many farmers in every corner of North America. Almost without exception they have regarded wildlife as a part of the farm environment, deriving a great deal of pleasure, and often pride, just from having a variety of birds and mammals on their property. Purely esthetic pleasure of this kind, while it puts coin in no man's purse, still must not be taken lightly. It is one of the rare commodities in our overcommercialized civilization on which no price tag can be placed. On many farms that I have visited the window bird feeder and bird house were almost standard items of farm equipment. This was not always because of a recognition of the value of birds in assisting agriculture, but more often merely because someone in the household derived pleasure from the song of the wren or the splash of color of the bluebird.

Many Farmers Are Also Hunters

Many of the farmers whom I know or have known have been hunters themselves or have had sons who enjoy a break in the farm chores with dog and gun, and they are anxious to attract deer, quail, rabbits and squirrels in order to enhance their own opportunities for recreation on their own property, so long as these populations do not conflict with production of the primary cash crops on the farm. Here again we have a value that cannot be measured in terms of financial gain, but one that is nonetheless very real to the individual involved.

Some forms of wildlife, of course, have values that can be measured in terms of dollars and cents, and this is especially true of the furbearers. On most farms the production of fur is an unappreciated and unrecognized source of supplementary income, which is often completely unexploited. On some, a farmhand or farmer's son may run

a few traps to pick up pocket money during the winter months, but the potential is far greater than the farmer usually realizes, especially if he cares to make a small investment in improving living conditions for these species.

Predators Keep Rodents In Check

The question of predators and pest species is a topic that is complex enough to devote volumes to, and volumes have been written on it. Farmers themselves, depending on the type of crops they raise, will disagree among themselves as to what constitutes a pest species. Reduced to fundamentals, however, the most destructive warm-blooded pests on the farm are rats, mice and other small rodents, and these in turn are the basis of the food chain of the larger farm predators. The cumulative damage caused by rodents is stupendous when measured in statewide or national totals.

The presence or absence of wildlife borders, multiflora rose hedges and ungrazed woodlands usually makes little difference in their distribution on a farm, but it will make a difference in the numbers of animals and birds that prey upon these species. The small predators exert a depressant effect upon mice, rats and other small crop-destroying pests and normally help keep their populations within easily controllable bounds. Barn owls, screech owls, sparrow hawks and other hole-nesting species of predators can be encouraged further by preserving hollow nesting trees in woodlots and along field borders and by the erecting of artificial nesting boxes.

Weasels, rabbits, crows, squirrels, woodchucks, foxes, and deer can cause damage to some crops and livestock at times, but in most instances it is damage that can be controlled through cultural practices or by more direct means. It is almost inevitable that some wildlife damage will occur on every farm, but this is no argument against

Commission Photo by Kesteloo

Quail hunting was improved on this farm by the planting of a lespedeza field border which provides food and cover for the birds.



the use of wildlife management practices. As a matter of fact, it is an argument in their favor, since many studies have shown that the most serious crop depredations usually rise when there is a serious imbalance between the communities of animals and plants on a given area. On a farm in which wildlife management is an integral part of the farm program, such damage can usually be kept to a minimum.

Wetlands Source of Income

Where the farmer wishes to realize some revenue from the wildlife crops on his farm, there are ways of increasing and enhancing these values at small additional cost and with little disruption of normal farm routine. A properly managed marsh, for example, often can return an income that compares favorably with that from adjacent croplands on an acre-for-acre basis. On many farms in Virginia there exist wetlands which, because of soil characteristics and other factors, cannot be drained and expected to produce sufficient income from crops to offset the investment required. In many instances there are lands formerly in swamp and marsh that have been drained and cultivated which have failed to pay off expenses. Many have been abandoned and permitted to revert to brush and weeds; others are cultivated annually, although they fail to return much more than the annual investment in taxes, labor and fertilizer. Such lands, if reflooded, could produce more income wildlife crops than they now produce in more traditional farm crops.

On private lands near Mattamuskeet National Wildlife Refuge in North Carolina a single goose blind may bring a farmer an income of up to several hundred dollars a season from rentals alone. Farmers near Washington and Richmond who can make their lands attractive to waterfowl are in a particularly favorable position to receive such cash bonuses from lands now regarded as liabilities. The potentials of such lands are great in ventures of this kind and are not always recognized. With favorably situated farms already used by geese and waterfowl, the investment in time and money may be next to nothing. Other farms often can attract waterfowl in huntable numbers if the owner erects simple water-control structures or opens overgrown existing marshes with dynamite or dragline.

The simplest form of wildlife "bonus," of course, is from the trapline run late in the season when pelts are prime and at their highest value. Especially if natural wetlands occur on the property, the only investment needed is in traps and time. Recent fur prices have not been high enough to encourage much activity along these lines except in the case of the muskrat and the mink, but both of these species occur on most farms in Virginia that have streams, marshes or ponds, and both bring good prices at the present time. Most furbearers are nocturnal in their habits, and it would be surprising to many farmers to know the variety and abundance of these animals that frequent their lands.

Fur Crop Can Be Increased

The borders of almost any farm pond or stream bank in Virginia will produce muskrats, mink, and an occasional



S. C. S. Photo

This farmer traps dozens of muskrats and several mink off of his marsh. Widespread use of natural fur as trim for ladies' fashions this winter is stimulating trapping activities.

otter with the return from such efforts depending upon the persistence and skill of the trapper and the current price of furs.

The farmer who sets out to produce a fur crop on his land, however, with modest expenditures can increase the productivity of his wetlands substantially. The principal needs of the muskrat are water the year around and sufficient fertility to produce the aquatic plants that are their primary food, and mink are found wherever there are muskrats. Where water areas already exist on a farm, one of the best ways to improve them for fur production is through the approved practice recommended by the Soil Conservation Service of fencing cattle away from stream banks and the shores of farm ponds.

Shooting Preserve a Possibility

If the farmer wishes to go all the way in commercializing on the wildlife potentials of his farm, there are opportunities for him in the management of this farm as a licensed commercial shooting preserve, provided that certain rather rigid state licensing requirements can be met. The shooting preserve can be a modest supplement to the production of more conventional crops, or it can be the tail that wags the dog of conventional farming, as it has become on some of the larger and more successful establishments of this kind. On the larger shooting preserves, primary income comes from hunting fees, from the sale of pheasants and eggs, and from training and boarding bird dogs. This sort of establishment is a specialized endeavor requiring a substantial investment and a knowledge of hunting dogs and pheasants.

It is possible, however, for a farmer to develop such a program on a smaller scale by purchasing birds for release before the gun and catering to hunters owning their own dogs. Any farmer contemplating such a program should first consult the Commission of Game and Inland Fisheries at Richmond and the Sportsmen's Service Bureau in New



Commission Photo

This trapper took 19 gray foxes, 2 red foxes, 12 minks, 17 raccoons, 5 opossums, 3 muskrats and 28 skunks from the Cumberland State Forest during one season.

York City, which can provide technical assistance in the form of advice by experienced field men and through literature. A farm planned under soil conservation standards is ideal for such purposes.

These are some of the advantages of a wildlife program that the farmer may expect or which he can realize if he desires. Obviously, as in nearly any other farm activity, his returns will be commensurate with what he wants to put into the project. In the majority of cases, however, the rewards will be from those intangible values to which no dollar sign can be attached.

How Fast Do They Fly?

The question of how fast game birds fly has always been a subject for debate—many times heated debate—wherever sportsmen gather.

Much research by various agencies and authorities has not yet brought to light the exact speed, and, according to a Remington Arms Company authority, never will.

"The speed of an upland game bird in flight," he said, "depends on a number of conditions. When he is unmolested his flight is slower than when he is frightened by the hunter's approach. The same applies to migratory waterfowl. On their long journey from one part of the continent to another, they conserve energy by adopting a somewhat 'leisurely' speed. If frightened, however, that speed is stepped up immediately, but even when frightened, all birds of any particular species do not fly at the same rate of speed under the same conditions.

"It will not be too surprising to experienced sportsmen to learn that, when molested, the dove flies slower than many other game birds. But to others, not so experienced, he appears to be a gray speed ball.

"Probably the fastest game bird we have," he continued, "is the canvasback duck, which, according to researcher's

records, is faster than the blue-wing teal by a narrow margin.

"Here are some figures on the flight speed of unmolested game birds. These are computed as an average from the findings of a number of researchers. I would not say that they are exactly correct, but they constitute the best information we have to date on the subject.

"Dove and plover, 34 m.p.h.; curlew, 38 m.p.h.; quail, prairie chicken, ruffed grouse, jacksnipe, mallard, black duck, spoonbill, pintail, wood duck, widgeon and gadwall, 41 m.p.h.; swans, 45 m.p.h.; Canada geese and brant, 48 m.p.h.; green-wing teal, 79 m.p.h.; redhead, 82 m.p.h.; blue-wing teal, 89 m.p.h.; canvasback, 94 m.p.h."

Tackle Repair Time

Now is the time to get out your fishing equipment and check it over for needed repairs and for cleaning, since the spring fishing season is not too many weeks away. By thoroughly checking your rod and reel now, if you find something which must be repaired by the manufacturer, there is sufficient time to send it and get it back before the fishing season begins.

Every reel should be completely taken apart, cleaned and lubricated. Kerosene and drycleaning fluid are good cleaners and, using reasonable care, are safe to use. Strong soap suds or detergent may also be used with good results, but the parts should be thoroughly rinsed in clear water afterward. An old toothbrush is very handy for cleaning gears.

As each part is cleaned, inspect it for wear and needed repairs. Many parts can be replaced at your local dealer and the reel need not be sent to the manufacturer.

To lubricate, grease should be used on the gears and oil elsewhere. If you have no regular reel-gear grease, some sticky auto grease will serve the purpose. Use only a trace of it on the gears. Use oil wherever two parts work against each other—and don't slosh it on!

The next piece of business is your rod. Carefully inspect the inside of each guide for grooves caused by the line. Any grooved guide should be replaced, since it will ruin new lines. Loose ferrules should be reset. And how about a coat of varnish to make your rod look like new? First, smooth the surface carefully with fine sandpaper or steel wool. To be sure the varnish will adhere to the rod, wet a small piece of rag with lighter fluid and rub over the area to be varnished. This will remove all oil from the rod. A very simple and efficient way to apply the varnish is to spread a drop or two between the thumb and forefinger and wipe it along the rod; use reasonable speed so the varnish won't begin to dry and get sticky. A tiny brush will be needed to get under the guides. Keep the varnish thin. The thinner the coat of varnish, the harder and tougher it becomes.

And while you are at it, take a small file and sharpen your hook points. Now you're ready for that opening day of fishing!

(Trout season in Virginia opens on April 16 this year and will continue through December 31.)

Decision-Making by the Game Commission



Commissioner Aaron

By J. C. AARON

Commission Photos by Harrison

FEW people fully understand the mechanics of decision-making by the Commission. I must confess that until I joined the Commission of Game and Inland Fisheries several years ago, I didn't fully understand it either.

Speaking for our own ten-member Game Commission, I believe I can safely and candidly say that everything we do, every regulation and program we adopt or pass on, we try to enact or approve insofar as possible *in the best public interest*.

I said, of course, try. We members of the Commission don't consider ourselves "holier than thou." We make mistakes. We err in judgment sometimes. But, on the whole, we try to do what is best for our Commonwealth. This means double-barreled decision-making: first, what is best for the wildlife resource; second, what is the best that we can give the people—all interests considered.

It's a tough job and it almost never comes easy. Ever see a 10-man jury in session on a difficult case? Well, we have the same problem. We have to decide what's best for wildlife and what's best for all people concerned, and it's plenty difficult most of the time.

Let me give you just one example of how the Commission handles a case. The liberalized bass season now in effect is a good example. Under the old regulations, we had a state-wide closed season on bass. Purpose: obviously a conservation move—at least, so it appeared to most wildlife resource workers in America.

What happened? The story is simple. Colleges and universities began training game and fish biologists in the thirties and forties, and when these bright young men started working for the commissions, they began to question certain management regulations. One such question was, Is a closed season on bass really necessary?

The directors of fish and game agencies said to the biologists: Go out and make your studies and give us some facts. Give us your recommendations.

This was done, and the evidence was much in favor of doing away with the closed season. Facts showed that nature raises in a given habitat only so many fish and no more. It didn't matter whether you had a six-month season or a 12-month season—the total harvest of fish would remain the same. So, the biologists agreed, why not let the fishermen have their sport all year around?

To get such a regulation through in Virginia, the Commission didn't just *do* it. It heard all the arguments pro and con. It heard the organized sportsmen. It heard the small groups of unorganized sportsmen. It heard the views of individuals. It heard the views of game wardens and information-education specialists. When all was said and done, it deliberated at length over the issue, then made its decision. Answer? If the fish population can safely stand it, a liberalized season would be in the best public interest.

And so it goes with regulations on game mammals and birds, as well as other policy and management measures. In essence and in actuality, what we see transpired in our Commission meetings is a small example of democracy at work.

There was a time—and not so long ago, at that—when the Commission had no technical task force. In those days, the Commission had to rely on the best information available. Much of the information on game and fish came from the local game wardens. They knew local conditions and knew many of the answers pretty well. But some they did not know. In such cases, the Commission, following expressions of opinion from different individuals and groups, simply made the best decision possible.

Now our field fact-finding team is more complete. We still consult with our wardens and hunters and fishermen, but now have the added help of the technically-trained biologists. Not to be overlooked, either, is the help we are getting from our communications specialists who have the important information-education responsibility of letting the people know what's what and of educating our people to conservation.

Mr. Aaron of Martinsville, Virginia, is a member of the Commission of Game and Inland Fisheries, representing Virginia's Fifth District.



The 10 members of the Virginia Commission of Game and Inland Fisheries do their best to work out plans and measures, rules and regulations, which are, in their opinions, the best for the people of the Commonwealth. Above, Director Phelps explains the Commission's financial situation to the commissioners.

No, our ten-man Commission jury is not a high-salaried group of bureaucrats sitting behind slick walls doling out decisions unresponsive to the will of the people. Rather, our body consists of non-salaried, plain but interested citizens, representing the people in each congressional district but trying to work out plans and measures, rules and regulations, which are, in every commissioner's humble opinion, the very best that we know for the people of the Commonwealth.

So, next time you have a wildlife conservation problem or a constructive bit of criticism to offer the Commission,

don't hesitate to voice your opinion. You'll be given a hearing, I can assure you. First, the commissioner in your district will be pleased to see you and talk to you. Secondly, you always have the right to ask to be heard before the Commission. To my knowledge, no citizen has ever been denied the right to be heard.

As a citizen and license-buyer, you may not always have the Commission rule as you wish, but you can rest assured your views will be fully considered and respected and that the Commission's ruling will be as just as our 10-man "jury" can make it.

WILLIAM C. GLOTH

Former Game Commission member William C. Gloth, who faithfully represented the 10th Congressional District on the Commission from 1947 to 1952, died unexpectedly in a Richmond hospital on December 15. He was 47.

Commissioner Gloth was appointed by Governor Tuck on April 28, 1947, to fill an unexpired five-year term and was reappointed June 9, 1949, for a six-year period ending June 30, 1955.

The son of William G. Gloth, who served as Commonwealth Attorney of Arlington County during that county's period of rapid growth, the late commissioner had been a practicing attorney in the metropolitan Washington, D. C., area prior to his retirement to Redart in Matthews County because of ill health.

He succeeded the late William S. Snow as commissioner from the eighth district and was later reappointed to re-

present the newly created tenth district.

Mr. Gloth, "Billy" Gloth as he was affectionately known to his many friends, was an ardent trout fisherman and enjoyed small-game hunting, especially quail. In more recent years he took up rockfishing seriously and became a past master at it. He and Mrs. Gloth were leaders in their community.

Billy is survived by his beloved wife, Wilma Gloth, and three daughters—Bonnie, Billy Ann, and Connie. He will be dearly missed by all who knew him.



The late Commissioner Gloth

Harmon Corr Littlepage, state game warden in King William County for 21 years, passed away October 28, 1959, in his 84th year.

Employed by the Commission on August 1, 1926, he retired on September 1, 1947, and was replaced by G. H. Meredith, present King William County warden.

How to Teach Conservation

By GEORGE H. HARVEY, *Wildlife Education Specialist*
Education Division

CHARGED with the molding and shaping of the minds and character of young people, Virginia's teachers are a most important group of adults. As well as providing instruction in the arts and sciences, mathematics and languages, it is within the power of teachers to influence the future wise use of our Commonwealth's natural resources. It is becoming increasingly evident that wise use of these natural resources will be a vital factor in maintaining a strong America. There is great need today to bridge the gap between man's knowledge of conservation and his practice of it, and the key to filling this gap is education—beginning with our children. The importance of the teacher's role in this task is obvious.

No attempt will be made here to outline a comprehensive program of conservation education, nor to give detailed directions as to how its integration into existing courses can best be carried out. Only you teachers can do that, and it is hoped that the few ideas here presented will alert you to some of the almost limitless possibilities offered by this fascinating—and challenging—subject: that of man's wise use of the resources which make up the earth he lives on.

One fact must be kept before us: All renewable natural resources are interrelated and interdependent. Therefore, we cannot stress the conservation of any one resource to the exclusion of all others. Our specific subject here is the teaching of wildlife conservation, but, from your past experience, you will immediately realize the ultimate dependence of all forms of life—wild, domestic, and human—upon soil, water, and plants. Thus, while the suggestions given here deal particularly with wildlife, it is hoped that you will relate them to the total picture of natural resource conservation.

Your task as a teacher has two vital aspects. First, you must instill an attitude of respect for our God-given heritage of the earth's riches. This boils down into one basic question. "What is *your* attitude?" As every experienced school teacher knows, far more is often conveyed to the students by what the teacher believes and lives than by what he or she says. Nothing can create enthusiasm for nature study as effectively as *your* interest and *your* enthusiasm. Children of all ages are quick to share their teacher's attitude of reverence for the life-giving and life-enriching gifts of God.

Secondly, you must impart a knowledge of the science of conservation to tomorrow's leaders, and especially to stimulate the pupils to learn more on their own. In order to apply the ideals of conservation, a student must learn the basic scientific facts behind conservation: e.g., what causes erosion and how it can be prevented; why forests are valuable in the protection of our watersheds; and why wildlife can usually be best improved by providing food

and cover instead of by restocking. Naturally, the concepts taught will vary with the grade level and ability of the students, but in every case a sound knowledge of the facts must guide the development of the child's attitude toward conservation.

"This is all very well, but I need some practical suggestions!" may well be your comment here. Perhaps the best single suggestion along this line is the time-proven method: Help your students *apply* what they have learned and thus continue their learning by actually doing. "Doing" can result in a great variety of conservation activities, limited only by your imagination and energy. Projects such as the following, adapted to the level of the grade you teach, will be useful in helping you relate the theory of wildlife conservation to local conditions and to the experience of the students.

A. In the classroom.

(1) *Drawings* (in art) to illustrate such things as good and bad conservation practices, and food chains in nature. Do not permit mere copying, but rather teach the students the idea and let them translate this into picture form.

(2) *Bulletin board displays* showing fish, birds, or mammals of Virginia. A wildlife conservation theme may be stressed. The use of original drawings, clay models, and "mobiles" adds to their attractiveness.

(3) *Exhibit of wildlife materials* in the classroom or using a display case in the hall. Children need little encouragement to bring in such things as abandoned bird nests, feathers, deer antlers, hides, turtle shells, etc. These should be identified and neatly labelled.



Commission Photo by Kesteloo

Summer conservation short courses sponsored by the Virginia Resource-Use Education Council acquaint teachers with the state's natural resources.



Commission Photo by Mosby

Nothing can create enthusiasm for nature study as effectively as the teacher's interest and enthusiasm.

(4) *Display of wildlife handicraft items* such as bird houses and feeders, squirrel nesting boxes, and plaster casts of animal tracks. These are best completed at home and brought to school on "exhibit day."

(5) *Spelling contest* using words learned during the study of conservation.

(6) *Oral reports* either based on the student's own experiences with wildlife or on a conservation reading assignment.

(7) *Class discussions* on some phase of wildlife conservation, such as the value of predators in controlling rodents. These may take the form of debates with careful advance preparation.

(8) *Library research projects* in English classes. The subject of wildlife conservation may be offered as one of the topics which the class can choose.

(9) *Annual Wildlife Essay Contest*, open to grades 5 through 12. This can be made a part of your class study of conservation, either as a required paper or as an elective project.

B. In the field, near school.

(1) *Bird walks* to observe and identify as many species as possible. Don't forget to note such things as locations where seen, food eaten, and songs. In cities, nearby parks offer an opportunity to see many common birds. Suggestion: Go over the area yourself before taking your class.

(2) *Identification (and collection, if desired) of mammals, reptiles, or amphibians.* Grasslands harbor mice and shrews which can be caught in a mouse trap baited with peanut butter and oatmeal. A pond or stream will usually provide an abundance of snakes, lizards, salamanders, and frogs. If provision is not made for proper keeping of live specimens, they should be released after examination.

(3) *Field trip to look for animal signs* such as tracks, dusting spots, feeding sites, etc. This can be combined with (1) or (2) above.

(4) *Plantings on school property* of seed-bearing shrubs or trees. If space permits, an outdoor wildlife laboratory may be developed, as at least one school has done.



Commission Photo by Kesteloo

Nature camps and field trips are never-to-be-forgotten experiences during which students can become acquainted with nature.

C. In the field, away from school (Note: These trips are more extensive and are best made after school hours or on Saturdays.)

(1) *Trip to a wildlife refuge, fish hatchery, or museum.* Advance preparations with the personnel in charge are advisable. Students may record their observations in small notebooks.

(2) *Visit to a farm where conservation measures are practiced.* Note such things as wildlife food plantings, farm ponds, and signs of wildlife. Ask the farmer to explain his conservation practices.

These projects can be made a regular part of some phase of your curriculum, whether it be science, English, social studies, or vocational agriculture.

Finally, if you feel a need for more knowledge in the field of conservation, here are three sources of help for you:

(1) *Summer conservation short courses* sponsored by the Virginia Resource-Use Education Council (P. O. Box 1642, Richmond) at V. P. I., Virginia State College, and the College of William and Mary. These three-week courses provide concentrated instruction in geology, soil and water, forests, and wildlife. Credit toward graduate study or certificate renewal is granted for satisfactory completion.

(2) *Books on the teaching of conservation* especially recommended are *Conservation Education in American Schools*, American Association of School Administrators, 1951; and *Conservation Handbook*, National Conservation Committee of the National Association of Biology Teachers, 1955. Teachers and principals will find the former both helpful and challenging. The latter provides the teacher with a wealth of stimulating ideas and projects which have been used successfully by schools throughout the country.

(3) *U. S. Government publications.* Three booklets are particularly helpful to the classroom teacher. *An Outline for Teaching Conservation in Elementary Schools*, PA-268, and *An Outline for Teaching Conservation in High Schools*, PA-201, contain valuable and practical ideas for class projects, experiments, trips, and other activities. The former also lists selected books on conservation. A third booklet,



Commission Photo by Kesteloo

Virginia game wardens are glad to show their equipment to school children and speak about their work.

Teaching Soil and Water Conservation, a Classroom and Field Guide, PA-341, lists experiments which students of all ages can conduct at school and at home. Single copies of each are available free to teachers from the U. S. Soil Conservation Service, 900 North Lombardy Street, Richmond 20, Virginia, or from the State Soil Conservationist,



Commission Photo by Kesteloo

On nature walks with qualified leaders, youngsters can discover all kinds of wild plants and animals.

Agricultural Extension Service, V. P. I., Blacksburg, Virginia.

Of all the privileges that belong to teachers, one should be particularly coveted by you: That you may see, growing in the lives molded by your influence, a deep and reverent respect for the Earth and the natural things of the Earth.

A Man and His Gun

One of the prize possessions of manhood since our forefathers first settled America always has been the gun. This attitude toward firearms has become an historic tradition in the United States. It represents a priceless freedom won by our forefathers which few other nations enjoy. So strong was their conviction about the right of reputable citizens to own and use firearms for lawful purposes that they amended our original Constitution to provide that "the right of the people to keep and bear arms shall not be infringed." So important was this limitation that it immediately follows the prohibition against violations of the rights of religion, speech, press, and assembly.

The right to keep and bear arms was exceedingly precious to men who faced dangers of many kinds in their daily lives. Colonial farmers with their muskets had helped win the Revolutionary War. On the frontier, a gun was usually the pioneer family's only protection against wild animals and prowling savages. It was necessary and accepted that young and old alike be intimately acquainted with firearms and use them as tools of everyday life.

Yes, guns have been and continue to be constructive tools in America. Today they are used to build healthy minds and bodies; to develop self-discipline, initiative, and team spirit; and to help prepare our young men to defend our American ideals, should the need arise, as did their forefathers. Hunting and shooting are wholesome forms of recreation which may be enjoyed for a lifetime.

Unfortunately, there is a growing prejudice against firearms. More and more excuses constantly are being

found to propose legislation, at the state and local levels, which denies the right to possess and use firearms for personal protection, for marksmanship training, for recreation, or even as collectors' items. Many anti-gun laws are presented by persons who believe that laws will prevent crime and accidental shootings. Others are advanced by individuals or groups who seek, through legislation, greater assistance in the arrest and conviction of lawbreakers. All of them are pointed in the wrong direction. They should be aimed at persons who use guns *improperly*.

We who prize the ownership and use of firearms are to blame if we permit the prejudice and opposition to grow. We cannot afford to underestimate, until it is too late, the worth of guns to us and to America. We cannot be guilty of "not missing the water till the well runs dry." It is our responsibility to win more support from more people in our efforts to prevent anti-firearms legislation, to teach firearms safety, to encourage marksmanship, and to promote shooting and hunting as a wholesome form of recreation. It is our responsibility to see that criminals who use firearms for unlawful purposes are severely punished. It is our responsibility to insist that all who own firearms use them properly.

The right to keep and bear arms is a foundation stone of American liberty. We owe it to our ancestors to preserve unimpaired that right which they have delivered to our care. We owe it to future generations that their inheritance not be destroyed. Let's act now to make certain that Americans always will have the freedoms, the values, and the pleasures signified by a man and his gun.

Editorial, *American Rifleman* magazine, March 1959.

VIRGINIA WILDLIFE

CONSERVATIONGRAM

Commission Activities and Late Wildlife News . . . At A Glance

STRIPED BASS LIMITS, OTHER FISH LAW CHANGES, NOW IN EFFECT. Changes in Virginia's freshwater fishing regulations made by the game commission on December 11 became effective on January 15. These changes include:

An amendment to regulation 45 which formerly made it unlawful to buy or sell striped bass (rockfish) taken in inland waters. This regulation now also provides for a continuous open season on striped bass in Kerr Reservoir and the Roanoke River watershed, places a 12-inch minimum size limit on stripers from this watershed, and states that stripers must be counted with black bass in the bass daily creel limit of eight.

A new regulation (134) which states that licensed fishermen may take "non-game" fish (carp, catfish, and suckers) at any time by snagging, grabbing, snaring, gigging, or striking iron in all waters (except public impoundments and waters stocked by the game commission) in the counties of Amelia, Appomattox, Brunswick, Charlotte, Cumberland, Dinwiddie, Greensville, Louisa, Lunenburg, Mecklenburg, Nottoway, Prince Edward, and Pittsylvania. This regulation combines regulations 95, 98, 131, and 132, which were rescinded.

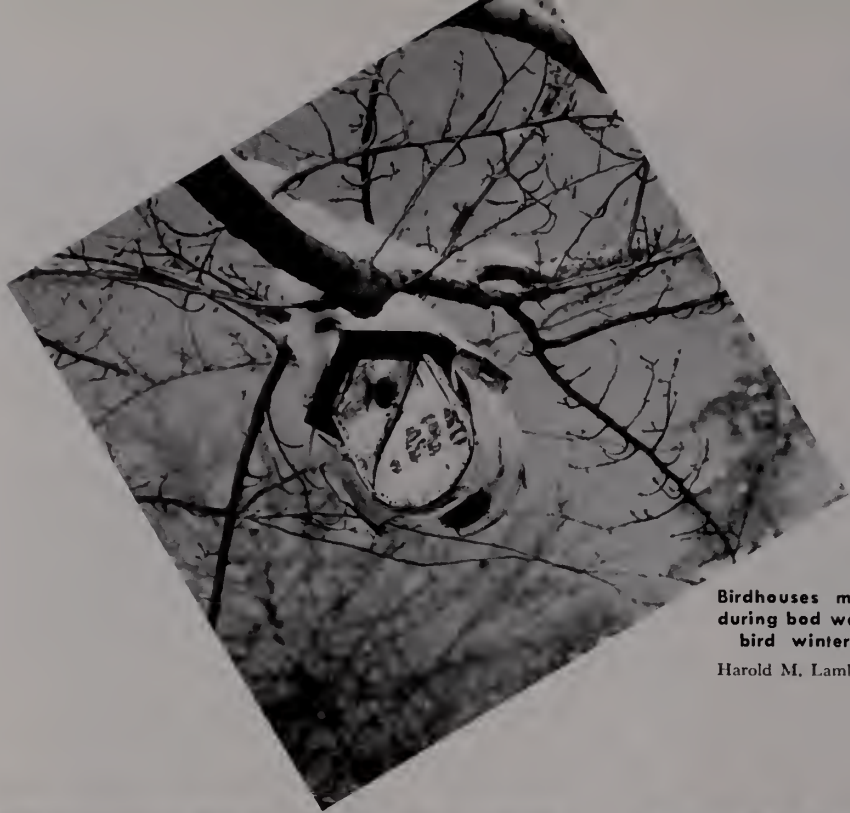
Elimination of special creel and size limits for Kerr Reservoir. This was done by rescinding regulation 103 and working out an agreement whereby North Carolina adopted Virginia's statewide game fish creel and size limits.

Trout season in Virginia this year will be April 16-December 31.

GAME COMMISSION WANTS OUT OF DOG BUSINESS. Encouraged by the fact that 68 counties and two cities have voluntarily taken over the enforcement of dog laws, the Virginia game commission is asking the 1960 general assembly to make it mandatory for all counties and cities to accept dog law responsibility. All game wardens could then work full time on game and fish law enforcement. The counties of Alleghany and Carroll began enforcing their own dog laws on January 1.

WATERFOWL UNDER OBSERVATION AT BACK BAY. The number of waterfowl wintering in the Back Bay-Currituck Sound area of Virginia and North Carolina during the recent hunting season remained somewhat higher than during the previous season, aerial counts by federal waterfowl biologist John Sincock revealed. While the highest 1958-1959 winter count was approximately 93,000, some 175,580 birds were counted on the interstate area November 21, 1959; 143,076 were seen November 22; 106,299 were noted December 3; and 123,280 were observed December 5. Of the high November 21 total, 75,051 were on Virginia's Back Bay. This number included 18,813 dabbling ducks (mostly baldpates), 5,915 diving ducks (practically all ringnecks), 1,170 coot, 27,123 Canada geese, 9,500 snow geese, and 13,530 swan.

NEW KERR RESERVOIR BOAT LANDING. The Virginia game commission has obtained an easement from the Army Corps of Engineers to construct an access road and boat launching ramp on the Hyco River, an arm of Kerr Reservoir, near route 58 in Halifax County.



Birdhouses may be used during bad weather by our bird winter residents.

Harold M. Lambert Photo



Commission Photo by Kestelo

Cozy, ball-shopped leaf nests are used by squirrels, both in summer and winter.

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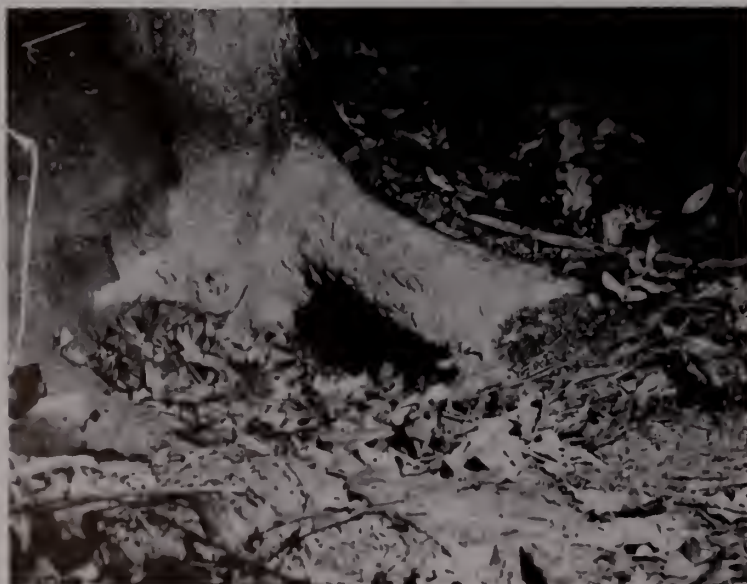
Commission Photo by Harrison

Small cavities in old trees are used by mice, chipmunks, squirrels and other small mammals.



Commission Photo by Harrison

A family of bobcats calls this rockpile on Mt. Rogers "home." Foxes use similar quarters.



Commission Photo by Harrison

Woodchucks, skunks, and opossums find shelter under tree roots as well as in underground burrows.

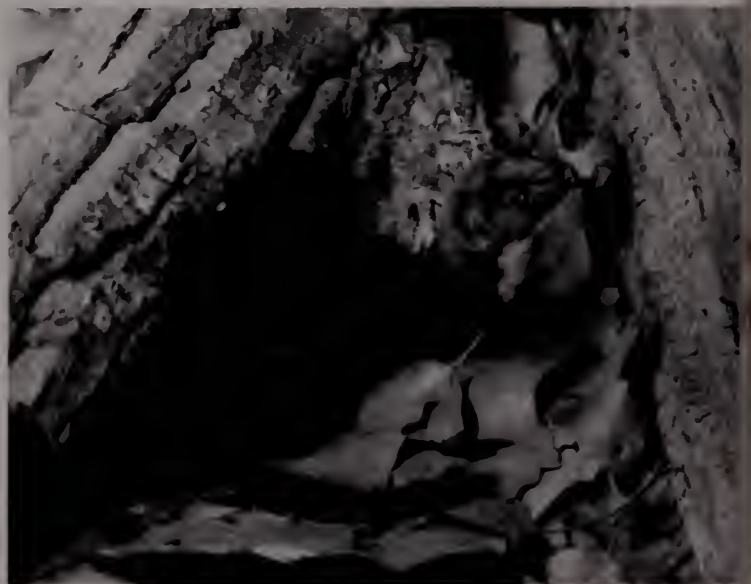


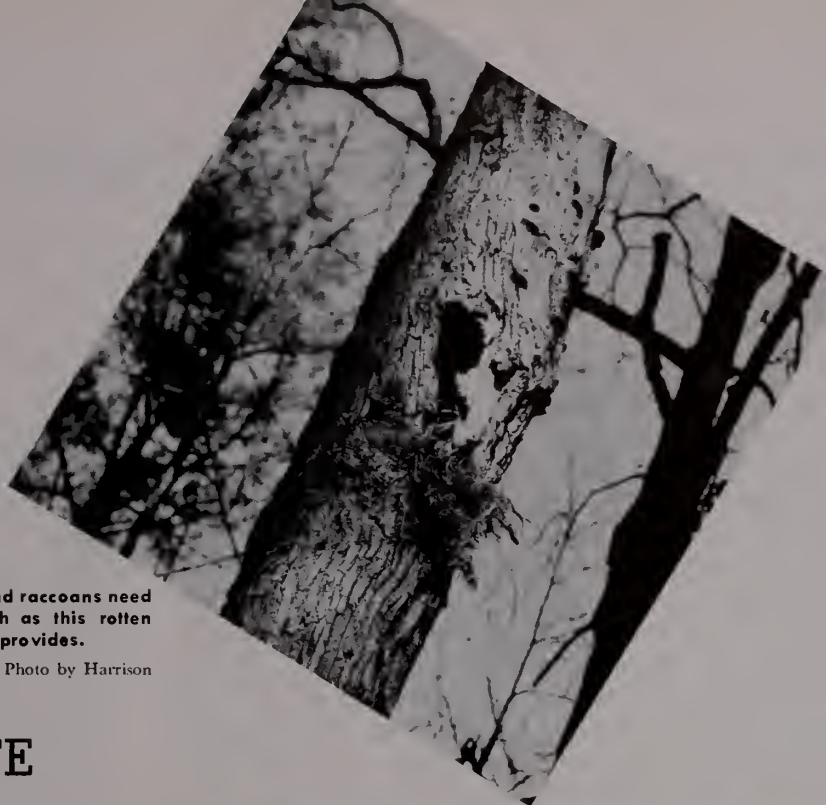
Photo by Leonard Lee Rue, III from National Audubon Society

The weasel is built to go through woodpiles and down narrow tunnels after mice.



U. S. Fish and Wildlife Service Photo

The cavity in this cypress tree has been used as a bear den for 25 years.



Squirrels and raccoons need homes such as this rotten tree provides.

Commission Photo by Harrison

WINTER HOMES FOR WILDLIFE

As well as youngsters can learn much about the habits and movements of wild animals by hiking through forest and farm all time of year. While birdhouses and squirrel leaf nests become temporarily deserted, den cavities in trees, cornshocks, brush piles, and underground tunnels shelter many forms of life from Old Man Winter's icy blasts. The number of den trees in a wooded area can determine how many raccoons and other small animals will live through the winter in that area. You can help nature provide winter homes for wildlife by preventing forest fires, providing brush and rock piles, leaving stacks of corn along field edges, not cutting down den trees, and leaving hollow logs in the woods.



Commission Photo by Harrison

Black bears sleep through the coldest days of winter in dens like this.



Commission Photo by Harrison

Brushpiles on a farm can save rabbits from predators and from exposure to freezing rain and snow.



Commission Photo by Kesteloo

Beavers spend the winter snug and secure in their lodge-houses, with their log food sunk in the pond below ice level.

Why Do You Hunt and Fish?

By JOE L. COGGIN

Commission Photos by Kesteloo

NOW that the hunting season is over and the fishing season is soon to come, let's pause for a backward glance and see if we can't do a little quiet thinking about this hunting and fishing business. Some interesting figures may help us get going. Calculate, for example, the amount of money you spent last fall on guns, ammunition, accessories and automobile costs. Now divide this figure by the number of pounds of game you bagged and find out how much all this cost per pound. Meat of this type comes at an amazing price, doesn't it?

Even back in the early 1940's, when prime beef was selling at 50 or 60 cents a pound, it was estimated in a certain Virginia county that, on the average, each deer killed cost the hunter \$200, or about \$3 per pound.

Currently, many duck hunters spend \$60 a day for room and board, blind and guide, not to mention transportation, equipment and various other necessary items that go into the making of a duck hunt. Yet the limit on ducks is three, and who would weigh a duck just to find out what it cost him per pound? The hunter who kills his ducks only in terms of the meat obtained is a poor grocery shopper indeed.

According to the National Survey of Hunting and Fishing conducted during 1955 by the U. S. Fish and Wildlife Service, approximately 21 million Americans fished and nearly 12 million hunted in the great outdoors, spending a total of almost 3 billion dollars altogether.

These millions of people spending billions of dollars must indeed have something other than tangible values to justify their interest in the two pastimes. It is interesting to note that very few people bring home the limit when returning from a hunting or fishing trip. There is not, and probably never will be, enough game for everyone to have such luck. We must, therefore, measure the value of hunting and fishing in terms of fun and wholesome recreation, and not by the amount of game killed, nor by the cost of killing it.

Can there be a better or healthier way to escape the pressures of daily work than to temporarily live a slow and peaceful life in the out-of-doors? After spending eight hours a day, five days a week at tedious work, especially at an indoor job, relaxation from tensions in the open air is necessary. A few hours in the fields, woods, or on the bank of a favorite "fishing hole" after hours or over the weekend is a welcome break for anyone. It's really more interesting if the fish are biting; but even if they aren't, the relaxation is always there. The excitement of catching a "whopper" once in a rare while is there, too. The beauty of natural surroundings and the pleasures of thinking undisturbed are other assets of the "fishing hole." When

you take these advantages, one by one, who would trade any of them for a dead fish? Not me.

Unless one goes alone, he usually picks a few of his best friends for company on a hunting and fishing trip. The perfect opportunity for richer fellowship that this provides, money can't buy.

Perhaps one of the best ways to show the hidden values of hunting and fishing is to point out the delights of sporting with the bow and arrow. It is hard to think of a more uncertain way of coming home with your bag limit, of course, but we have already said meat is not the point. Yet the craving for bow hunting and fishing is growing rapidly, especially in the southern states. Outwitting game with a bow takes skill, lots of patience, and know-how—all good qualities which in many ways we have lost in our usual hunting and fishing.

Shooting fish with a bow also takes skill and know-how. It isn't easy to hit a fish under water because of light refraction. And if a fish is hit, there is still the dubious task of reeling him in. This can be quite a thrilling experience if the fish is big.



The twelve million Americans who spend millions to go hunting each year are obviously after something other than the tangible value of the meat they bring home.

Mr. Coggin spent four years as special services officer in the Commission's education division, then in May 1958 joined the game division as a biologist and is currently working on a waterfowl project in the Back Bay area.

Only a person unfamiliar with the sport would call a bow hunter a "meat hunter." It's a plain contradiction of terms. If a man were hunting for meat only, he'd be foolish to jeopardize his chances by using an inferior weapon—inferior, that is, to a gun.

When bow hunters get together after a day in the fields, a great deal more talking and laughing goes on about "shots missed" than about "kills." It is the pleasure from both the hunt and the fellowship afterwards that really counts with these folks.

You may ask, Where do the various wildlife agencies fit into the picture? It seems apparent that we are not merely supplying meat for the table by stocking a stream with fish or establishing a deer herd in some desirable area. The Commission is trying to do more than this. The Commission's idea is to preserve, safeguard, and, where possible, expand the opportunity for recreation, which is, after all, the most important thing.

The demand for outdoor recreation is steadily increasing. Presently, over one-half billion days of recreation are spent by hunters and fishermen each year. As was previously stated, there really isn't enough game to insure each sportsman his limit and there probably never will be. Yet a man likes to know there is something around whether or not he is able to fill his bag or creel.

The game and fish provide the "come on" but the real

product of the outdoors, particularly in hunting and fishing, is the physical, mental and spiritual uplifting we get in association with being out in the open.

I hope that is the main reason why you hunt and fish.

MUD—Major Enemy of Good Fishing

"Mud is the major enemy of good fishing in this country," according to Dr. D. Homer Buck of the Illinois Natural History Survey. "Whether suspended in the water, making it turbid, or deposited on the bottom of a lake or stream as silt—either way, it destroys fish and fishing opportunities. Soil belongs on the land where it's valuable, not in the water where it does harm."

"In our work on Oklahoma ponds and reservoirs," Dr. Buck explained, "we learned some important facts about how fish and fishing are affected by silt and turbidity.

"First, fish grow more rapidly in clear waters. Bass in our clear ponds, for example, increased their weight six times while the bass in muddy ponds were doubling their weight.

"Second, fish reproduce more successfully in clear waters. In fact, bass were not able to spawn at all in highly turbid ponds. Bluegills were a bit more tolerant.

"Third, food is more plentiful in clearer waters. In the ponds on which we did our research, we discovered that thirteen times as much plankton—microscopic plants and animals which are basic fish food—was produced in clear ponds than in muddy ponds. These organisms need light to be able to grow—and light can't penetrate muddy water."

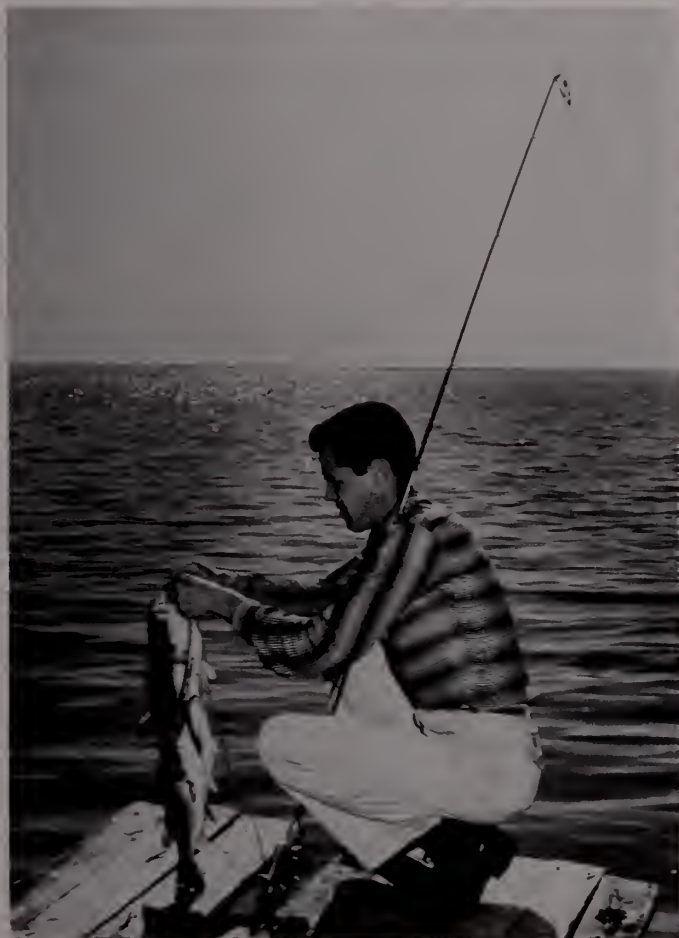
Dr. Buck's paper presented at a North American Wildlife Conference, sponsored by the Wildlife Management Institute, climaxed a two-year, pioneering study of turbidity in ponds and reservoirs in Oklahoma.

"More than just fishing is at stake," Dr. Buck pointed out. "Muddy waters aren't pretty. On the clear reservoirs, there was an abundance of boating, picnicking, and other outdoor recreation. But few people went to the muddy reservoirs for any kind of recreation. And as for the fishing itself, twelve times as many fishermen tried their luck on the clear waters where they could fish amid scenic splendors—and they caught more than twice as many fish, too."

Muddy waters make poor fishing, and they are also a symptom that our land is being robbed of its richness. Silt results from erosion—due, largely, to poor farming. Already, according to the U. S. Department of Agriculture, we have lost by erosion the use of 25,000,000 acres of once highly valuable cropland and 75,000,000 acres of land which was once good for marginal farming. Every year an additional 500,000 acres are washed away.

Erosion costs our landowners \$557,000,000 every year. But that's just the beginning, as Dr. Buck's research proves. When the soil is mixed with water, it becomes mud—and mud destroys the game fish in our waters and our incentive to fish them.

Dr. Buck's study points the way to vastly improved fishing across the nation—and shows clearly that we must start our work on the land.



A few hours in the fields, woods, or on the bank of a favorite fishing hole after hours or over the weekend is a welcome break for anyone. Above, author Coggin with a string of bass.



Commission Photo by Harrison

The author, Mrs. Dugdale, is president of the Ashland Garden Club.

Suggested Projects for Garden Clubs

and Other Women's Organizations

By MRS. ARTHUR A. DUGDALE

VIRGINIA women are known for their loyalty and their group spirit, their desire to work together for a common cause. It is estimated that some 1,000 women's clubs and organizations are to be found in the Old Dominion, with garden clubs making up more than half this total today.

A thousand clubs averaging a membership of 100 to a club is 100,000 women. This is a lot of organized women and, as everyone knows, especially our legislators, this is a lot of power, a lot of strength. Well directed, well used, the power of women's clubs is overwhelming. Misused or improperly used, it can be disastrous. Not used at all, it can mean a great potential good going to waste.

One of the most essential needs of any club is its integrity—keeping the club together and active. When a club loses this basic quality, it dies. Few of us like to see anything die, especially our own club.

Activity alone, however, is not enough. One can be working vigorously and accomplish little of importance. What is needed is a sound activities program. This should be planned and then pursued to its execution with all the enthusiasm that the club can marshal. To put it simply: to survive well a club must have worthwhile projects; and it must have the group action necessary to carry out those plans.

One of the great issues in America today is conservation: the safekeeping and safe using of our soils, waters, forests, wildlife, and minerals. In this issue we all have a stake, for as our natural resources go, so will America. Virginia garden clubs, and club women in general, can do much along conservation lines if they will put their shoulders to the wheel. Too often valuable time is wasted on trite rules for flower arrangements. Or conservation efforts are confined to prohibiting the use of certain native plant

material when the basic issues of life are neglected.

As a first bit of practical advice: see to it that your club is posted and informed of what is going on in the conservation field. Begin by appointing a strong conservation committee and by selecting an active chairman. This committee, then, should be the conservation spark-plug group in your club.

At least once a year this committee should plan an annual program—your conservation meeting perhaps—where an outstanding speaker-forum program can be planned. In the meantime, the committee can be working on and reporting on the other conservation activities of the club.

Worthwhile Projects

Here are some very worthwhile conservation projects every garden or women's club should consider:

- *Teacher scholarships in conservation.* One of the best things a club can do is to support the summer teacher workshop program. Make it a point each year to provide at least one \$85 conservation scholarship to a teacher wishing to take the three-week conservation short course at V. P. I., William and Mary, or Virginia State College. Plan to spend a day at the workshop yourself as this writer did. You will be amazed at your own ignorance. How can our children know the meaning of conservation if they have never been taught?

This program has the blessing of all the resource agencies in the state as well as the State Department of Education; it is basic, practical, and down to earth. The project is handled by the Virginia Resource-Use Education Council, Box 1642, Richmond, Virginia, and checks should be made out to the Secretary-Treasurer. The Council is a non-profit, educational organization designed to coordinate conservation education at the state level. Representatives from over 20 state and federal resource-use agencies and educational institutions form the Council. All monies

Currently president of the Ashland Garden Club, Mrs. Dugdale has recently completed two years as state conservation chairman of the Garden Club of Virginia. Under her direction, two highly successful Annual Conservation Forums for the garden clubs have been held in Richmond.

"See to it that your club is posted and informed of what is going on in the conservation field." Free informative materials are available from the State Game Commission.



Commission Photo by Harrison

contributed to this program are tax exempt. A letter or card to the Council will bring you more particulars. This progressive program deserves the support of all women's organizations in the state.

- The *Conservation Essay Contest* is another excellent and already functioning project that needs our support. It is sponsored each year by the Virginia Commission of Game and Inland Fisheries and the Virginia Division, Izaak Walton League of America, who award some \$1,800 in cash prizes each year to successful school essayists. Your club can not only urge local schools to enter but can also help more directly by visiting schools, making talks, distributing literature, and assisting in other practical ways. Again, a card to the Virginia Commission of Game and Inland Fisheries, Richmond, Virginia, will bring you full information.

- *Send a boy or girl to a qualified summer camp that stresses conservation.* This is a noble gesture on the part of any club. Boys and girls learn so much about the beauty of the earth that every child should have at least one camping experience. Although there are many good camps throughout the state, one of the very best camps is Nature Camp at Vesuvius, run by the Virginia Federation of Garden Clubs. The person to contact about this is Mrs. Fred Schilling, Afton, Virginia.

- The *Keep Virginia Beautiful Project* is something that the state club women should push individually and collectively. This should be a continuous program and pushed enthusiastically every year at the local level. Contact your own conservation chairman for the particulars.

- *Sponsor Girls Youth Clubs.* One of our big needs in America today is for cultivation of worthwhile interests and activities in our youth. Wherever possible, try to support or give aid to girl scout troops, FHA clubs, junior conservation clubs, etc. Developing in youth a love and knowledge of the outdoors is essential if we are to keep some of our "natural" America. Individually and collectively, then, anything that club women can do for our young people will be that much more insurance that our future will

remain secure.

- *Place Conservation Literature in Local Libraries.* No branch or school library should be without some good reference materials on conservation. Twenty-five dollars will provide a lot of good books and booklets. A number are especially recommended:

Books

- Water—or Your Life*, Arthur H. Carhart. J. B. Lippincott Co., Philadelphia and New York, 1951. \$3.50.
- Water, Land, and People*, Bernard Frank & Anthony Netboy. Alfred A. Knopf, Publisher, New York, 1950. \$4.00.
- Wildlife Conservation*, Ira N. Gabrielson. The Macmillan Co., New York, 1956. \$4.75.
- Our Wildlife Legacy*, Durward L. Allen. Funk & Wagnalls Co., 153 East 24th Street, New York 10, New York, 1954. \$5.00.
- Handbook for Teaching of Conservation and Resource-Use*, The National Association of Biology Teachers. The Interstate Printers and Publishers, Inc., Danville, Illinois, 1955.
- Conserving Natural Resources*, Shirley W. Allen. McGraw-Hill Book Co., Inc., New York, 1955.
- Conservation Education in American Schools*, American Association of School Administrators, 1201 Sixteenth Street, N. W., Washington 6, D. C., 1951. \$4.00.
- Forests and Men*, William B. Greeley. Doubleday & Co., Inc., Garden City, New York, 1951. \$3.00.
- Our National Forests*, Bernard Frank. University of Oklahoma Press, Norman, Oklahoma, 1955. \$4.00.
- Practice of Wildlife Conservation*, Leonard W. Wing. John Wiley & Sons, Inc., New York, 1951.

Booklets

- Birdlife of Virginia*, Joseph J. Shomon, Commission of Game and Inland Fisheries, Richmond, Virginia, 1951. \$.25.
- Freshwater Fishing and Fishlife in Virginia*, Joseph J. Shomon. Commission of Game and Inland Fisheries, Richmond, Virginia, 1954. \$.25.



Commission Photo by Kesteloo

At three-week summer short courses, teachers are exposed to the basic principles of natural resource management.

Conservation Experiences for Children, Effie G. Bathurst and Wilhelmina Hill. (U. S. Department of Health, Education, and Welfare, Bulletin 1957, No. 16). Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. \$.75.

These are only some of the things your club can do to make your conservation program active and worthwhile.



Commission Photo by Harrison

Here Forest Warden Harner tells teachers at Virginia State College about forest fire damage in that area.

Why not begin now with your new program?

Finally a word about legislation. Every club should have an active and alert legislative committee. This means voicing your opinion, individually and collectively, on matters that concern your club. Conservation is one of those matters, so keep a close tab on what's going on at the state and national capitols and when the call for help is sounded, give the issue your full support.

Mathematics Applied to United States Water Supply Problems

Hydrologists of the Department of the Interior's Geological Survey using probability mathematics in the analysis of U. S. water supply problems have concluded "there is a limit to the practical gains which can be accomplished by building reservoirs on streams, and that limit already may have been reached if not exceeded in some of the western drainage basins."

Survey Circular 409, "Water Yield and Reservoir Storage in the United States" by Walter Langbein, points out that whereas current reservoir storage development in the United States makes regulated use of about 190 million acre-feet of water, (some 13 percent of the total U. S. river flow) future needs "challenge our ingenuity in achieving efficient location of added storage." The report accepts a figure of about double this amount as the estimated anticipated need by 1985 or 1990.

The trend in construction of reservoirs is still steeply upward, the author observes, but "the point of ultimate development for hydroelectric power, irrigation, flood control, and navigation may be seen on the horizon." He expects water supply and pollution control to be the dominant objectives of water storage in the future.

"Although in the United States as a whole," the report concludes, "substantial increase in water supply can be obtained by additional storage development, water control by storage follows a law of diminishing returns. There is a limit to the amount of storage that can be useful."

The Colorado River is an example of a river basin where storage development may be approaching, if not exceeding, the useful limit.

The prospect of a shift in emphasis toward water supply for towns and factories sharpens the need for added development of storage in the populated regions of the country. The Ohio River (excluding the Tennessee and Cumberland Rivers) was singled out for special mention as "an eastern stream having less than one percent of its total flow under regulation." It is also a river causing considerable damage from floods.

To attempt to achieve complete regulation yielding the mean annual flow is shown to be impractical. The evidence provided by data on the capacity and regulations of 27 representative U. S. reservoirs shows that a relatively huge amount of storage space would have to be provided and that each additional increment of storage capacity yields a smaller and smaller increment of actual flow regulation.

Applying this specifically to the Upper Colorado River basin, the report shows that reservoir capacity in excess of 40,000,000 acre-feet achieves no practical additional water regulation when evaporation loss is subtracted from annual regulation. The report concludes that if reservoirs with capacity beyond an additional 15 million acre-feet are constructed there, evaporation loss will thereafter offset any hydrologic benefit of the regulation achieved.

Conservation Short Courses For Virginia School Teachers

By E. W. MUNDIE, *Extension Soil Conservationist*
Agricultural Extension Service, V. P. I., Blacksburg, Virginia

SOMEONE has said "a nation deprived of its liberty may regain it; a nation divided may reunite; but a nation who destroys its natural resources must inevitably pay the price of deprivation, want, poverty, and decay." There is no way to prevent this from happening save through education. Neither adults nor youth preserve that which they do not understand or appreciate.

A conservation short course for Virginia public school teachers, founded on this premise, was first offered in 1956. This course is designed to meet "head-on" the problem of giving our youth through teachers an added appreciation of the resources on which their future depends.

During the past four years between 275 and 300 teachers from more than three-fourths of the counties of the state have studied basic conservation principles in short courses offered at Virginia Polytechnic Institute, the College of William and Mary, and Virginia State College. The course is cooperatively sponsored by the Virginia Resource-Use Education Council and the institutions of higher learning. It lasts three weeks and provides three semester hours credit for satisfactory completion. The credit may be used for certificate renewal and for either undergraduate or graduate credit.

Instruction is given in geology, marine life, soil and water, forestry and wildlife. Lectures, laboratory exercises, and field trips are combined to teach basic conservation principles and to help teachers gain a better understanding of Virginia's conservation problems and solutions to these problems. Information given in the course not only deals with conservation principles that may be taught in the classroom, but explores ways to best teach them.

Conservationists of Virginia Polytechnic Institute and conservationists of the several agencies of federal and state governments have served as instructors for the three short courses. These conservationists have had many years of experience in Virginia's conservation program and are well qualified to teach conservation principles. A few evening programs are included in the course for which outside speakers from industry and various governmental organizations are secured.

Scholarships which pay the "on-campus" expenses of students have been provided by a large number of organizations. Some of the organizations supplying scholarships are Izaak Walton Leagues, garden clubs, sportsmen's clubs, soil conservation districts, county farm bureaus, other interested organizations, and many phases of industry.

When asked what students do in the short course, Mrs. Bili S. Ehmann, a teacher of Patrick County, answered in this way:

*For three weeks our conversation
Has been chiefly conservation*

*As we picked up rocks, and crumbled soil, and
pinched the bark on trees.*

We have seen the crop rotation

And the farm deterioration-

*The effects of sun and flood and fire, and careless
use, and freeze.*

We have crammed our minds with reasons

To adapt the crops to seasons,

And to soil profiles and watersheds and sloping of the land;

We have stood (with our feet swelling)

As we heard the experts telling

*How to save the soil and water and maintain the
forest stand.*

We've observed the weather gauges,

Taken notes by page-and-pages,

*Learned to sympathize with trees because they oft
are girdled too!*

We've seen dicots with samara,

Compound leaves both broad and narrow

*And we know from Rabbit habits how to get him
in a stew.*

From Atlantic to Pacific

Resource waste has been terrific,

From the time of Pocahontas and the huts at Plymouth Rock;

But, while waters have been muddied,

Agencies have mapped and studied

*Waste and use and proper treatment for the nation's
basic stock.*

We approve reforestation,

Game preserves for recreation,

Flood control and fire prevention, farm analysis and such.

We know where to seek assistance

*And we see how game can help the cause of
"wise use" very much.*

With our maps and free materials,

And our notes that run like serials,

We will soon be going back into the classroom situation.

Armed for combat with the masses

We will staunchly face our classes,

And you bet that every day we teach them Mundie's Conservation!

In addition to exhibits and other materials forwarded to us from teachers who have taken the course, a large file of letters have been received which clearly point out the value of the course in classroom teaching. But nothing to be said about the course is more satisfying than to know that approximately 15,000 Virginia school children are annually benefiting from this natural resource conservation-education endeavor. In turn, these citizens of future years will be much better equipped to supply the leadership that is so necessary for the full development of Virginia's natural resources.



The Starling

By DR. J. J. MURRAY
Lexington, Virginia

MEN, unsatisfied with the wealth of bird life that we have in the United States, have made many efforts to introduce species from other lands. Some of these have been proper and successful, such as the establishment of suitable game birds like the ring-necked pheasant. Others have been foolish and futile, as witness the hope of having nightingales in America. Still others have been at the same time unduly successful and dangerous. One of these, the English sparrow, has finally settled down to fill a harmless niche in our bird population. The worst and unhappily the most successful of these efforts is seen in the explosive spread of the starling across our country.

It is usually exceedingly difficult to establish a bird or mammal in a new country; but the rule seems to be that, if established, the new species is apt to multiply unduly and, without the natural checks to its spread, becomes a pest. The most notorious example of this rule is the fantastic multiplication of rabbits in Australia. The increase of the starling is a bad enough case in point. Now it is forbidden by the Lacey act to attempt to introduce exotic species except under federal supervision.

Interestingly enough the same man, Eugene Schieffelin, who introduced the starling into America, also had a share in the earlier introduction of the English sparrow. He released sixty starlings in Central Park in New York City in 1890, and forty additional birds the following year . . . For some years they spread very slowly, but then at an increasing rate until now they have moved to the Rockies

and the Northwest. In Virginia we have too many in summer and huge flocks in winter.

Economically the starling seems to be neutral in its effects, the damage to small fruits being balanced by the enormous number of insects it destroys. On two points, however, the score piles up heavily against them. Setting their bulky nests in the crevices of our houses, they pile up trash and create fire hazards. Even more seriously, they have had by their competition for nesting sites a very bad effect on bluebirds and woodpeckers. I have seen a pair wait until flickers had finished excavating their nesting hole and then dispossess the hard-working woodpeckers.

Starlings have two plumages. The summer plumage is black, with metallic purplish and greenish hues, the feathers with small cream spots, and the bill yellow. In winter the birds are much more heavily spotted and have black bills. Young birds are pale tan-brown. In some birds the black bill begins to turn yellow as early as mid-December. One characteristic of the bird is that it walks with an unattractive kind of waddle.

The rapid increase of the starling is due to its fecundity. In Virginia it often raises three broods. I have seen it carrying nesting material as early as February 27, and have found young in the nests in July. The nest is simply a ball of grass, leaves, feathers, and other trash, practically filling the hole in which it is placed. Five or six eggs are laid, beautiful enough with their pale blue color and shaped like a little bobwhite's egg.



Wildlife Agencies Plan to Put Duck Trappers Out of Business

Law enforcement personnel of the Virginia Commission of Game and Inland Fisheries and the U. S. Fish and Wildlife Service met recently at Accomac Court House, Virginia, to plan an all-out attack on the illegal trapping and selling of wild ducks on the Eastern Shore of Chesapeake Bay. In attendance from Virginia were enforcement chief Webb Midyette, game warden supervisors Roland Halstead and Stuart Purks, game wardens R. T. Charnock, E. C. Cropper, J. W. Crumb, and M. J. Doughty, and refuge manager Granville Ross.

"If the courts and the general public support the efforts of the reinforced state-federal warden patrol, Eastern Shore duck trapping can be made a thing of the past," Chief Midyette stated.

Over 300 Schools Enter 13th Wildlife Essay Contest

As the deadline for submission of entries in the 13th Annual Wildlife Essay Contest co-sponsored by the Virginia Game Commission and the Virginia Division of the Izaak Walton League approached, some 310 Virginia schools had registered to enter the contest. Entries had to be postmarked no later than midnight, January 31, 1960, to be considered.

Game Warden Supervisor Nabs Prisoner After Tussle

A prisoner who escaped from two Chesterfield County officers near Farmville was recaptured December 9 by a game warden supervisor who won a scrap for a loose pistol.

Kenneth Donald McCart, 23, who faces charges of robbery in Richmond and Chesterfield County, escaped from two deputies who were returning him from Southwestern State Hospital.

I. H. Vassar, game warden supervisor

for the Patrick Henry district, said he saw McCart flag a truck on U. S. 460. Vassar followed the truck in his car until it put McCart out a mile west of Farmville.

"He crossed U. S. 460 when I drove



Commission Photo by Harrison

A. Ree Ellis of Waynesboro attended his first meeting of the Virginia Commission of Game and Inland Fisheries as a member of the commission on October 23, 1959. He was appointed by Governor Almond on October 7 to fill the unexpired term of the late Thomas G. Herring of Dayton.

up and started running. I ran behind a house and caught him," Vassar said.

Vassar held a pistol on McCart while he called police. He said McCart grabbed the weapon, telling Vassar:



Commission Photo by Harrison

Law enforcement chief Webb Midyette looks at Supervisor "Ike" Vassar's right hand, which was torn in a struggle with an escaped prisoner for a gun, December 9.

"Now you drive if you don't want to get hurt." He placed the gun at Vassar's stomach.

"I grabbed the gun behind the hammer—I knew he could not shoot me that way—when he put it in my stomach and finally wrung it out of his hand," Vassar added.

Chesterfield Police Capt. Raymond Koch, driving on U. S. 460 to aid in the search for McCart, saw the two men fighting in the parked car.

"I had him (McCart) under control when he got there," Vassar said.

McCart was taken to the Petersburg jail. Vassar's right hand was cut in the fight for the pistol and several stitches were required to close the wound.

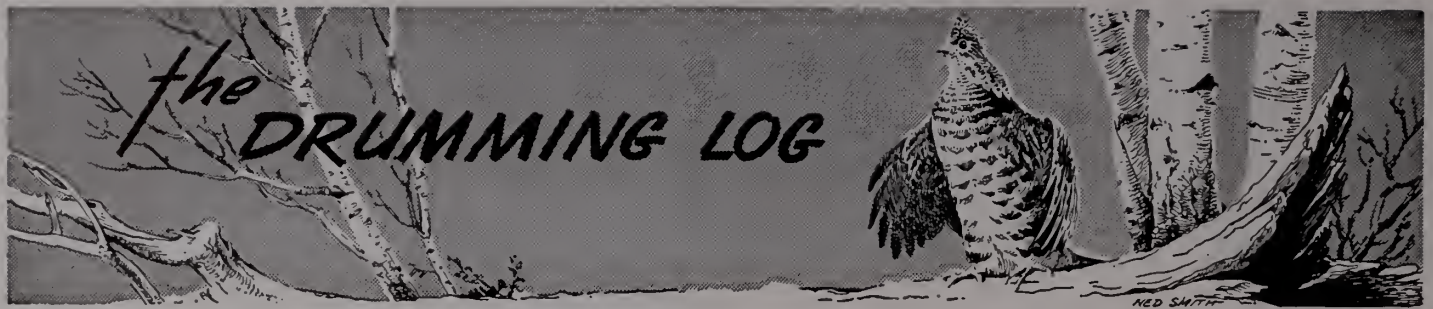
Village Hunt Club Honors Former Richmond County Game Warden

On November 12, at a special meeting of the Village Hunt Club, Harry France, retiring Game Warden for Richmond County, was honored and given a present for his outstanding contributions to the club, which he was instrumental in organizing.

Shenandoah County Wildlife Food Patch Contest Winners Announced

Winners of the Hamburg Ruritan Club's wildlife food planting contest, open to students from the Mt. Jackson and Edinburg schools, were: Jimmie Miller, Mt. Jackson, first prize (a \$25 Savings Bond); Everett Bowers, Jerome, second place, (a cash prize of \$10); and Charles Gochenour, Edinburg, third place, (\$5).

Wildlife seed was furnished by the Virginia Commission of Game and Inland Fisheries. Judges were W. H. Fadely, Virginia Game Commission Game Manager and Chairman of the Agricultural and Conservation Committee, Hamburg Ruritan Club; Elon Sheetz, State Game Warden; J. E. Thornton, Game Biologist; Donald Link, Agriculture teacher at Central High School; and H. G. Alexander, Agriculture teacher at the Stonewall Jackson High School.



Bear Travel

Do bears travel long distances? This question has interested game biologists for a long time. Two reports during early December support the theory that bears do travel.

After traveling about 90 air miles in a five month period, a tagged black bear was killed in Amelia County.

Game Commission bear specialist Alton R. Stickley reported that the bear was tagged in the Big Levels area of Augusta County on June 28, 1959. The bear weighed 100 pounds when tagged.

A little more than five months later, Spencer D. Reams killed the same bear about two miles from his home in Ammon in Amelia County. This is a distance of about 90 miles from the place where the bear was trapped by Stickley. In the five month period, the bear had gained 24 pounds.

When asked why a bear would travel so far in such a short time, Stickley said, "There is no logical reason why a bear should do something like this, except for the possibility that when he got out of that trap he wanted to get as far out of that country as he could! The mast crop in the Big Levels area is quite good this year."

A report of the first bear ever killed in Stafford County also supports the theory that bears do a lot of traveling. Stafford County Game Warden D. A. Farrell said that a 220 pound black bear was shot by Ben Dye near Bollie Beach Store this season, the first ever killed in his county. It is logical to believe that this bear also travelled from the mountainous regions to the west.

Although Stickley's tagging program is not aimed at studying the movements of the black bear, it may provide much valuable information about this animal's habits in its travels throughout our state. In 1958, Stickley tagged 31 bears and this past season he tagged 42 bears. Twelve have been harvested.

Almond's Buy Duck Stamps' Plan Backed By 34 Other Governors

Virginia's Governor J. Lindsay Almond, Jr., who in recent weeks came to the aid of the nation's hard-pressed waterfowl with a plea to all "friends of wildlife" to purchase \$3 federal duck stamps, has received letters commending his duck stamp suggestion from governors of 34 other states, the state game commission reports.

The governors of the states of Alabama, Arizona, Colorado, Delaware,

and state conservationists in their struggle to resolve difficult problems created by the current critical waterfowl situation."

Despite the governor's efforts, however, duck stamp sales for the current fiscal year are reported by the Post Office Department to be running 30 percent behind last year's sales, and the federal refuge expansion program is threatened by lack of funds.

1960-61 Federal Duck Stamp Design Selected

A black and white wash drawing featuring redhead ducks—a drake, hen, and four ducklings swimming in the reeds—has been chosen as the design for the 1960-61 Migratory Bird Hunting Stamp, the Department of the Interior announced recently.

John A. Ruthven of Cincinnati, Ohio, is the artist who drew the winning design for the 11th annual "duck stamp" competition conducted by the Bureau of Sport Fisheries and Wildlife, Fish and Wildlife Service.

Theme being portrayed for the 1960-61 issue is: "Wildlife Needs Water: Preserve Potholes."

This will be the 27th stamp to be issued in the federal duck stamp series. The first stamp went on sale in 1934. The 1960-61 stamp will be the second of the \$3 series, as authorized by Public Law 85-585.

Retiring NAS President Feted; Murie Also Honored

After a quarter century of service as chief executive officer and president of the National Audubon Society, John H. Baker made his predicted retirement official at the 55th annual convention of the Society held November 7-10, 1959, in New York City. The retiring president was honored by special citations and tributes delivered at the convention banquet, among them an honorary membership in the Natural



Tennessee Game and Fish Commission Photo

Governor Buford Ellington of Tennessee has issued an open letter to Tennessee waterfowl hunters, similar to that written earlier by Governor Almond, urging that they purchase duck stamps to help preserve the waterfowl resource.

Georgia, Idaho, Illinois, Iowa, Kansas, Kentucky, Louisiana, Maryland, Minnesota, Mississippi, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Vermont, Washington, and Wyoming all reportedly expressed concern for the future of the country's migratory waterfowl, and many said they too would ask the sportsmen of their states to be sure to buy the federal stamps.

Assistant Secretary of the Interior Ross Leffler has said that, "We in federal fish and wildlife work are deeply grateful for the real helping hand (Governor Almond has) given our people

Resources Council of America conferred upon him by C. R. Gutermuth, chairman of the Council.

Carl W. Buchheister, senior vice-president of the Society, was the unanimous choice of the members to succeed to the presidency.

At the banquet, Dr. Olaus J. Murie of Moose, Wyoming, was awarded the Audubon Society Medal for distinguished service in conservation. Dr. Murie, scientist, author and artist, was cited for his work in bringing public attention to the need for setting aside an area of the Brooks Mountain Range in northeast Alaska as an Arctic Wildlife Range.

BOOK REVIEWS

This is Nature

Mr. Richard W. Westwood, beloved editor of *Nature Magazine* for nearly 30 years, has recently collected into one volume the best articles, stories, and photographs from this famous magazine. He asked Mr. Walter Ferguson to contribute some of his well-known nature drawings, and the result was *This Is Nature*—a nature anthology of distinction and beauty. Published in 1959 by the Thomas Y. Crowell Com-

pany of New York, and priced at \$5.95, the book will appeal to young and old alike.

Any naturalist, amateur or professional, any lover of birds and animals, will find himself in delightful company as he opens this book. It contains the work of such famous writers as E. Laurence Palmer, Edwin Way Teale, William Beebe, Donald Culross Peattie, Olin Sewall Pettingill, Jr., and many others. Splendid and unusual photographs are scattered throughout the publication. For example, there are remarkable close-up pictures of baby opossums and photographs of patterns in nature that test one's ingenuity to discover what they actually are. The drawings by Walter Ferguson are incredibly beautiful; they add the final touch of perfection to a striking anthology.

Full of fascinating nature lore, heartwarming stories, and scientific observations, *This Is Nature* belongs on every nature bookshelf.

The Wild Mammals of Missouri

An award-winning husband and wife team of biologists on the staff of the Missouri Conservation Commission—

Charles W. and Elizabeth R. Schwartz—in 1959 produced this authoritative and readable reference guide. The text clearly and concisely presents significant facts about 62 species of wild mammals, including description, distribution and abundance, habitat and home, foods, reproduction, importance, management, and control. Also included are a brief introduction to the study of mammalogy and a valuable list of selected reference for each species.

Published by the University of Missouri Press and the Missouri Conservation Commission and selling for \$5.95, the book includes almost 400 illustrations by Mr. Schwartz, one of America's most distinguished wildlife artists. Fifty-six of these are full-page plates showing the animals in action in their habitats.

Mr. and Mrs. Schwartz have published many articles in technical and popular journals and are co-authors of several books—among them *Game Birds in Hawaii*, recognized by the North American Wildlife Society as the "Best Publication in Wildlife and Ecology" in 1949 and 1950. They have also produced three award-winning motion pictures.

Virginia Water Report Out

The long-awaited report on Virginia's water resources is out. The attractive, 112-page, well illustrated progress report was released by the State Soil Conservation Committee on December 3. Observing that no natural resource is less appreciated and more misunderstood than water, the committee urges a coordinated long-range study of the state's surface water resources.

In addition to the demands of a growing population, Virginia must also meet an ever expanding industrial need, which may increase by as much as one billion gallons a day within 10 years, the Committee declared.

In its comprehensive survey of water problems and resources, the Committee also urged that every well dug in Tidewater Virginia be reported to State authorities in order that necessary geological information may be compiled; warned of the necessity of cooperative, long range planning by municipal areas



Commission Photo by Harrison
Delegate John H. Daniel, chairman of the State Soil Conservation Committee, supervised the production of the Virginia Water Report.

to assure adequate future water supplies; suggested a number of farm practices that may be used to conserve water and retard erosion.

The Report notes that there are more than 40,000 Virginia farmers who have applied soil conservation practices to their farms embracing more than 6,600,000 acres in the past 10 years. These efforts were made under the Soil

Conservation Districts Program, begun in 1938. The Committee's Report also pinpointed major water problems yet to be tackled, as outlined by local citizens in communities across the State. Problems included insufficient storage capacity; inadequate conservation practices; and stream flow. The local inventory of water problems, started in 1957, was hailed today by Delegate John H. Daniel, Chairman of the State Soil Conservation Committee, as evidence of growing "water consciousness" among Virginians.

But, he warned, this essential public awareness of water problems must be accelerated in the years ahead. The public must recognize its vital stake in preserving and improving this "sparkling gift of Nature."

If additional information is desired, contact J. H. Daniel, Charlotte Court House, Virginia—business phone: Keysville 2021, residence phone: Charlotte Court House, KI 2-2202.



RICHMOND GIRLS DECORATE BIRD CHRISTMAS TREE

Good Books

To most Virginians the name bobwhite quail and the sport of bird hunting are one and the same. Young hunters who have recently become interested in this sport and those that will soon take it up should want to know about the lives of these fascinating little game birds. Elizabeth and Charles Schwartz have written a new book for young people called *Bobwhite from Egg to Chick to Egg*. This little book covers the life history of the quail and presents it in a simple, clear fashion. The illustrations, too, are true to nature and lovely in expression. Holiday House, \$2.50, 48 pp, line drawings, ages 6-15.

If you are looking for variety in your wildlife reading, try *Wild Life Stories*, edited by A. L. Furman. This young reader's book is a grand collection of exciting stories about wild animals, fish, and birds in their natural habitat. Here you will find the thrilling stories of two youngsters who succeed in trapping a roaming panther in a school house; of a family of baby raccoons who made their home in a summer camp and saved the campers from the ravages of a dangerous rattlesnake; of beavers at work building their dam and their encounter with a cougar; of a wild duck saving her family from a hungry mink. These stories are written by a number of authors including Wood, Montgomery, Shay, Kjelgaard, and others. Grosset & Dunlap, 191 pp., line drawings, ages 7-12.

Some of the smartest and most interesting animals are found in the weasel family. The weasel, skunk, mink, otter, marten, wolverine, and badger are all described in simple and readable language in *The Weasel Family* by Charles L. Ripper. The author's drawings of these interesting creatures add a lot to this fine book. Morrow Junior Books, 64 pgs., illust., \$2.50, ages 8-12.

Each Christmas season, rain or shine, the Brownies and Girl Scouts of the Richmond area decorate the evergreens at Maymont Park with food for the birds.

In spite of the rain, more than ninety girls representing eight Brownie troops and a Girl Scout troop gathered at the Maymont Nature Center for their annual Christmas Party on December 12. After a talk and film on birds presented



Commission Photo by Harrison
Brownies of Troop 176 decorate bird Christmas trees at Maymont Park.

by Game Commission Education Specialist George H. Harrison, the girls endured a heavy downpour to place bird food on the trees around the nature center.

Mrs. Milton Glaser, program chairman for the occasion, said that the girls had prepared the bird food themselves. Among some of the delicious tid-bits were cereal and popcorn strings, pine cones filled with raisins and peanut butter, cheerios and bread squares on strings.

The morning event ended at noon with a guided tour of the Maymont Wildlife Exhibit which contains some of the birds and animals of the state in their natural habitats.

Young Deer Hunters

Lancaster County Game Warden H. H. Pittman, Jr., reports that two boys,

Steve Potter, age 12, and Tim Saunders age 11, went deer hunting with their dads and each shot a buck deer this season.

The two youths from Ottoman, Virginia, were among a hunting party of nine. Both boys were placed on stands beside their fathers for safety and instructional reasons. Both were using 20-gauge shotguns and they killed their deer within 40 minutes of each other.

Potter's five point buck was his second deer in two seasons. Saunders' four point buck was the first he had ever killed.

Junior High Girls Take Conservation Trip

In preparation for the annual wildlife essay contest sponsored by the game commission, the 7th and 8th grade classes at the Country Day School For Girls in Virginia Beach took a conservation trip to Seashore Park this fall. According to the headmistress at the school, Mrs. Charles M. Lovitt, the girls returned to their English class the following day and all wrote their impressions of the park's famous cypress pond. Betsy Parker wrote her impressions as follows:

"A cypress pool is a mystic thing of beauty. Emerging from the still black water are the straight gray trunks of the cypress trees looking like silent sentries. Their forms are made more mysterious by the gray Spanish moss draped over their limbs like a misty gray mantle. Mingling with the moss are the rusty brown cypress leaves. Under these ghostly but beautiful trees are the cypress knees. The oddly shaped forms may be clustered together resembling frightened children or standing alone like people so lovely and graceful that they are set apart from others. Always, a feeling of peace and quiet is with the cypress pool, making its beauty complete."

Wildlife Questions and Answers

Ques.: Why is it that some animals hibernate and others do not?

Ans.: This is a question to which nobody really knows the right answers. In the evolutionary development of the animal kingdom, some species developed traits peculiar to hibernation and estivation. The characteristic is mostly nature's way of keeping certain species alive during periods of abnormally cold weather. Actually, very few animals truly hibernate. The most common hibernators are the seven sleepers—black bear, woodchuck, coon, opossum, chipmunk, mole, and, bat. All of these animals have a reduced metabolism during the cold winter months and store an abundant amount of fat in the summer and fall to prepare for the winter months ahead.

Ques.: Why is it that most fresh-water fish do not bite in the winter?

Ans.: The biologists answer this question by saying that the reason is mostly a matter of metabolism rate in the fish which, of course, are cold blooded. As the temperature of the water rises, the metabolism speeds up. Fish get more active, require more food and so bite better. As a general rule, the warmer the water, the more active the fish so the better they bite.

Ques.: Is February a good time to plant trees and shrubs?

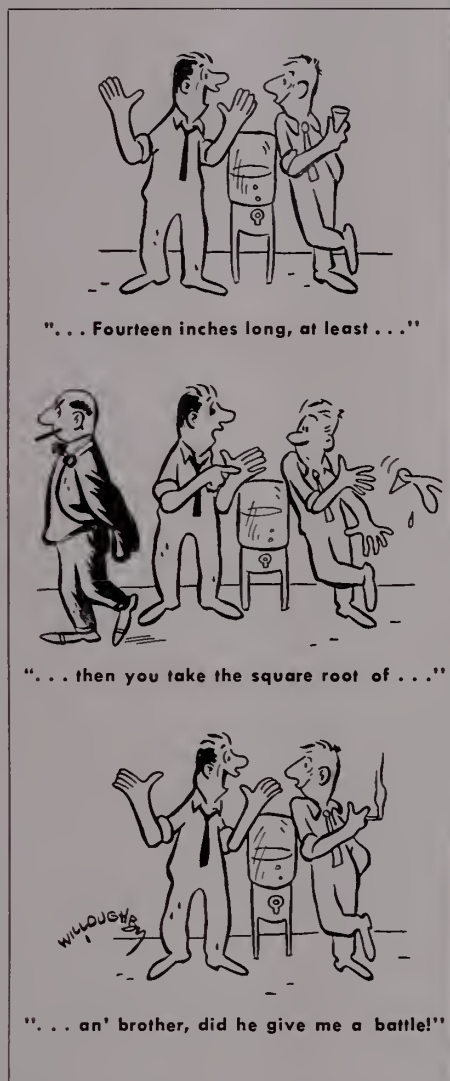
Ans.: A bit too early for most climes in Virginia. The best time to plant trees and shrubs is just as soon as the ground is unfrozen and is able to be worked. There are some days in February when planting is entirely possible and desirable. At any rate, a good rule to follow is to have your planting done before root growth starts in the early spring.

Ques.: Where is the best place to market furs?

Ans.: Pelts taken during the winter trapping months and properly stretched and dried can be marketed locally or sent to any one of the numerous fur houses in the country that buy furs. The principal fur houses in America are located in the New York, New York and St. Louis, Missouri, areas. Several of the outdoor magazines—particularly *Fur*, *Fish*, and *Game*—carry advertisements of reputable fur houses. Local furriers can supply the names of local fur dealers.

Ques.: What are the best foods to use in bird feeders around the home?

Ans.: Most any of the small inexpensive seed mixtures are good. Suet, bread crumbs, meat scraps, etc., also are relished by most seed-eating birds.



Ques.: Are deer still on the increase in Virginia?

Ans.: Very definitely—yes.

Ques.: How far do bears travel?

Ans.: Studies on the black bear are now being made by biologists in Virginia. Recently a bear tagged in the Big Levels area near Waynesboro was shot in Amelia County, a distance of 90 miles away. The average travel range, however, would be much less than this.

Ques.: Has a bobcat ever been known to have a long tail?

Ans.: It's possible, but we have never known of such a specimen ever having been taken.

Ques.: How do you keep muskrats from digging holes in a farm pond?

Ans.: Try planting tubers, willows, and other plant foods away from the dam area. Also, removal by trapping is partially effective. Best in season, of course, when the pelts are prime and produce some income to the landowner.

Ques.: Will quail ever take to trees?

Ans.: Sometimes. Hunters occasionally see singles take to small pines on the flush.

Ques.: What outdoor activities can be followed in the off-season month of February?

Ans.: Hiking, horseback travel in back country, trailing animals in the snow to learn something of their habits, identification of trees and shrubs via bark and buds, bird study, building wildlife shelters and feeders, bow and arrow practice, rifle and pistol marksmanship on established outdoor ranges, sledding, skating, skiing, and snowshoeing are only a few of the countless wholesome outdoor activities that are possible. No. February need not be a dull month.

Ques.: What is our most dangerous wildlife animal?

Ans.: In North America, probably the brown bear. Normally, however, bears of all species will seldom attack man unless surprised or provoked. As for the world, many big-game hunters name the water buffalo as the world's most dangerous mammal. For second place, it seems to be a toss-up between the tiger, elephant, leopard, and lion.

Ques.: What happens to tree frogs in the winter?

Ans.: All frogs are amphibians and cold-blooded, spending their cold months in hibernation, usually below the frost line in moist ponds and wet crevices.

Ques.: Has the ivory-billed woodpecker become extinct and, if it has, was it ever present in Virginia?

Ans.: The ivory-bill is probably gone forever. A specimen was reported seen in the heavy woodlands of Louisiana several years ago, but none since. Dr. Alexander Wetmore of the Smithsonian Institution in Washington, D. C., says there is a very small outside chance that a specimen or two may still be found in Florida. As far as Virginia is concerned, the ivory-bill could have reached northward as far as the Dismal Swamp, but probably did not extend into Virginia at all.

Ques.: Is the rifle more deadly than the shotgun?

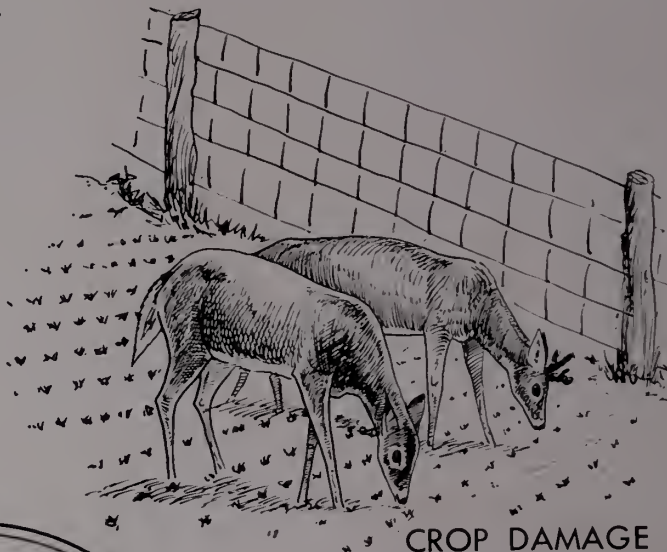
Ans.: Both are deadly, and both can be very safe. It is the person behind the gun that makes it unsafe. Let's not put the blame of hunting accidents on the guns, but on the careless persons using them.

WHEN DEER GET TOO NUMEROUS...

this is what happens —



OVER-BROWSING



CROP DAMAGE

GOOD DEER
MANAGEMENT
CAN PREVENT THIS.
DOE, AS WELL
AS BUCKS, SHOULD
BE HARVESTED.



POOR TROPHY VALUE



MALNUTRITION



WASTE
OF A VALUABLE
RESOURCE



DISEASE

D. RAEV